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Attorney's Docket No.: 2571 USA X 01/TCG/GCM/LE

#23
Declaration
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Patent
9-18-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Pravin K. Narwankar et al.

Serial No.: 09/096,858

Filed: June 12, 1998

For: METHOD AND APPARATUS FOR
ANNEALING A DIELECTRIC FILM
(as amended)

Examiner: Mai, Anh D.

Art Unit: 2814

Assistant Commissioner
for Patents
Washington, D.C. 20231

DECLARATION UNDER 37 C.F.R. § 1.131

Sir:

I, Pravin K. Narwankar, declare as follows:

(1) I am an inventor of the claims of the above-captioned application ("the Application") and an inventor of the subject matter described therein.

(2) At least prior to February 26, 1998, the invention claimed in the Application had been conceived and reduced to practice in this country.

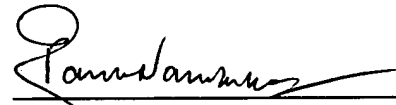
(3) As evidence of invention attached hereto as Exhibit A is an Applied Materials Invention Alert Form entitled: "Use of RPS Technology for 1) Annealing High K Dielectric 2) Depositing of High K Dielectric with Active Anionic Species", which in its unredacted form, is dated prior to February 26, 1998.

(4) All statements contained herein made of my own personal knowledge are true and all statements made herein on information and belief is believed to be

true. I am informed and understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Date: 9/3/2002



Pravin K. Narwankar



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Circle Only One Area of Technology
Applicable to This Invention:

Metal CVD	AIT	Microcontamination
HDP CVD	PVD	HDP Etch
DCVD	Platform	SHO Etch
<u>RTP</u>	HTF	Metal Etch
TFT/AKT	CMP	AMIL

INVENTION ALERT FORM

(Please use separate attachments for any answers that don't fit on the form, especially for questions 6-8. If the answer to a question is "none", please write "none" rather than leaving the answer blank.)

1. Today's Date: _____

2. Title of Invention: USE OF RPS TECHNOLOGY FOR
~~FOR RPS~~ ① Annealing high k dielectric ② depositing high k dielectric with active anionic species

3. Provide the following information for EACH inventor:

Inventor #1

Name: ANKINEEDU VELAGA
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Citizenship: US
Home Address: 10180 PARKWOOD Dr., #7
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Boss's Name: TURGUT SAMIN
Boss's Job Title: PROGRAM MANAGER
His/Her Boss's Name: JAMES TIETZ
His/Her Boss's Job Title: DIRECTOR
Product Group: CAPACITOR / RTP

Inventor #2

Name: ~~PRADIP K. NARWANIKAR~~ PRADIP K. NARWANIKAR
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Boss's Name: ANKINEEDU VELAGA
Boss's Job Title: JDP & Integration Manager
His/Her Boss's Name: TURGUT SAHIN.
His/Her Boss's Job Title: Capacitor Program Manager.
Product Group:

Inventor #3

Name: TURGUT SAHIN.
Telephone: 408-257-6542
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Cupertino, CA 95014
Boss's Name: Jim Tietz
Boss's Job Title: Program Director
His/Her Boss's Name: Chris Gronet
His/Her Boss's Job Title: General Mgr, RTP
Product Group: Capacitor Program / RTP

Inventor #4

Name: ~~RANDALL S. URDAHL~~ RANDALL S. URDAHL
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Home Address: 3898 Magnolia Drive, Apt. 12
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Boss's Name: Turgut Sahin
Boss's Job Title: Capacitor Program Manager
His/Her Boss's Name: James Tietz
His/Her Boss's Job Title: Director
Product Group: RTP

4. Earliest dates and model names of all Applied products incorporating the invention which have been offered for sale or are expected to be offered for sale.

5. If the invention has been demonstrated or described to persons other than Applied employees, for each disclosure please provide the earliest date, name of company, and brief description of what information was disclosed and the purpose of the disclosure.

Ta₂O₅ annealing using RPS O₂ + N₂ mixture was demonstrated to Lucent.

Electrical data was gathered at customer site hence process details were disclosed.

6. If disclosures as in question (4) are expected to occur within the next 12 months, please provide the anticipated date, type of information, and purpose of the disclosure.

As the process will be a potential ~~for~~ BKM process it would have to be disclosed to the customer.

7. Describe the invention, preferably with reference to drawings.

An innovative process to anneal thin films of dielectric material at low temperatures. (< 400°C). This process is applicable for a host of dielectric materials ~~at~~ and those currently used for high k applications for capacitor technology which include: Ta₂O₅; TiO₂; BST; 12T; ONO; NO; Ti doped Ta₂O₅ etc.

8. List each feature of the invention which you consider novel and non-obvious. Describe the advantages of each novel feature in comparison with the state-of-the-art approaches which are closest to your invention.

- ① Annealing at temperatures $< 400^{\circ}\text{C}$ for most dielectric materials. This temperature is $<$ deposition temperature.
- ② RPS could be used during the deposition process itself thus eliminating the annealing step.

9. Describe any other known designs, or processes, whether actually implemented or merely proposed in a publication, which could be considered similar to your invention or which constitute the state-of-the-art which your invention improved upon.

10. Signature, date, and printed name of each inventor plus two witnesses who have read and understood this Invention Alert form.

Pravin K. Nanwankar	Pravin K. Nanwankar
Turgut Sahin	Turgut Sahin
V. Anand	ANKINEEDU VELAGU